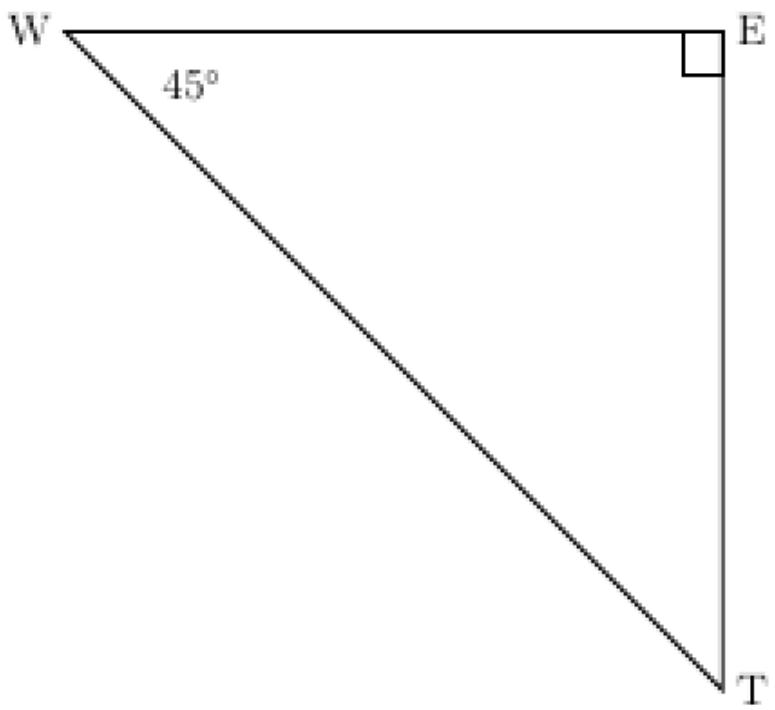
Topic: 45-45-90 triangles

Question: Find the missing side length.

If $ET = 3$, what is WT?



Answer choices:

A $\sqrt{6}$

B $2\sqrt{3}$

C $3\sqrt{2}$

D 9

© Krista King Math

Solution: C

ΔWET is a 45-45-90 triangle.

The pattern for the sides of a 45-45-90 triangle is x, x, and $x\sqrt{2}$, where x is the length of each leg. In this case, $x = 3$ so the sides are 3, 3 and $3\sqrt{2}$.

Or, you can use $a^2 + b^2 = c^2$.

$$3^2 + 3^2 = c^2$$

$$18 = c^2$$

$$c = \sqrt{18}$$

$$c = \sqrt{9 \cdot 2}$$

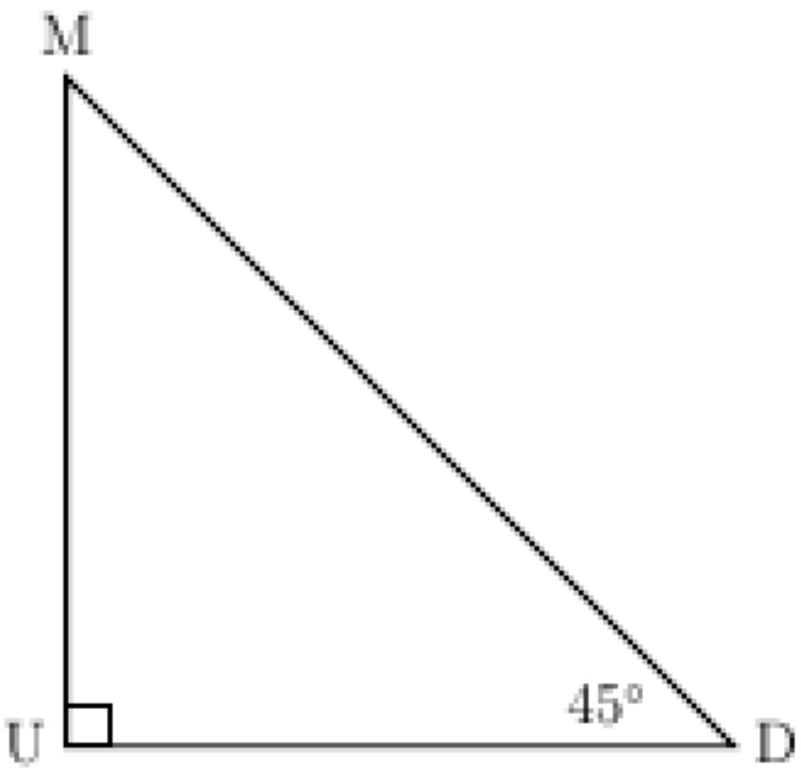
$$c = 3\sqrt{2}$$

© Krista King Math

Topic: 45-45-90 triangles

Question: Find the missing side length.

If $MU = 2\sqrt{2}$, what is MD?



Answer choices:

A $\sqrt{2}$

B $4\sqrt{2}$

C 2

D 4

© Krista King Math

Solution: D

ΔMUD is a 45-45-90 triangle.

The pattern for the sides of a 45-45-90 triangle is x, x, and $x\sqrt{2}$, where x is the length of each leg. In this case, $x = 2\sqrt{2}$ so the sides are $2\sqrt{2}$, $2\sqrt{2}$, and $2\sqrt{2} \cdot \sqrt{2} = 2(2) = 4$.

Or, you can use $a^2 + b^2 = c^2$.

$$\left(2\sqrt{2}\right)^2 + \left(2\sqrt{2}\right)^2 = c^2$$

$$4(2) + 4(2) = c^2$$

$$8 + 8 = c^2$$

$$16 = c^2$$

$$c = \sqrt{16}$$

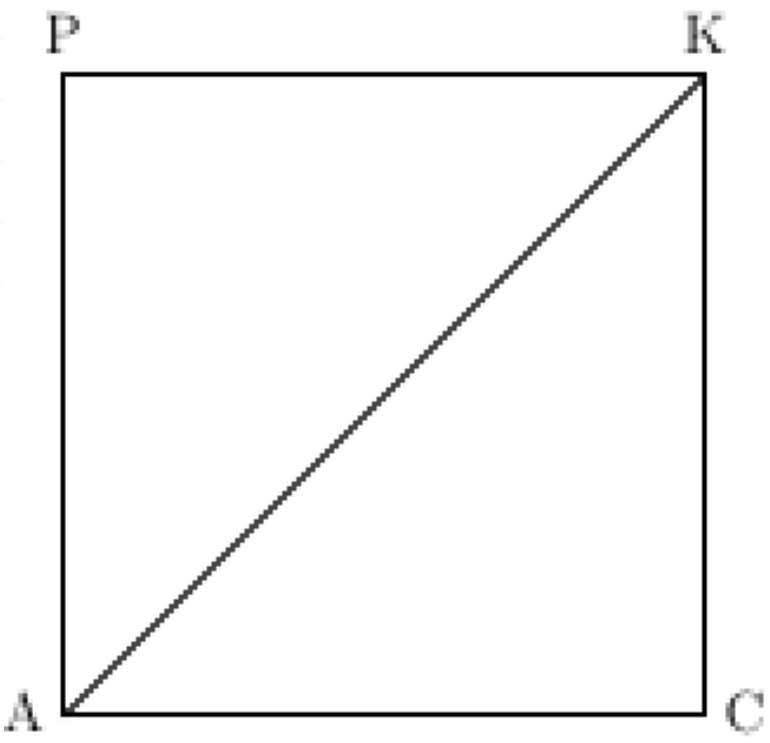
$$c = 4$$

© Krista King Math

Topic: 45-45-90 triangles

Question: Find the missing side length.

Square $PACK$ has a diagonal of 4. What is the length of PA?



Answer choices:

A $2\sqrt{2}$

B $4\sqrt{2}$

C $8\sqrt{2}$

D 4

© Krista King Math

Solution: A

ΔPAK is a 45-45-90 triangle.

The pattern for the sides of a 45-45-90 triangle is x, x, and $x\sqrt{2}$, where x is the length of each leg. In this case, we know 4 is the hypotenuse, which is represented by $x\sqrt{2}$.

Write $x\sqrt{2} = 4$ and solve for x.

$$x\sqrt{2} = 4$$

$$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{4}{\sqrt{2}}$$

$$x = \frac{4}{\sqrt{2}}$$

$$x = \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$x = \frac{4\sqrt{2}}{2}$$

$$x = 2\sqrt{2}$$

Or, you can use $a^2 + b^2 = c^2$.

$$x^2 + x^2 = 4^2$$

$$2x^2 = 16$$

© Krista King Math

$$x^2 = 8$$

$$x = \sqrt{8}$$

$$x = \sqrt{4} \cdot \sqrt{2} = 2\sqrt{2}$$

© Krista King Math